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ABSTRACT

This paper presents three vignettes to help teachers engage students in self-regulated learning. "Vignette One: Strengthening Your Will Power--Taking Charge of Your Life" explains how to help students take charge of themselves by "working smarter, not harder," i.e., by developing the habit of using such strategies as elaboration, organization, and rehearsal. "Vignette Two: What's the Use? You've Got It or You Don't" discusses learning strategies for taking tests and completing assignments. Successful students' skills include accomplishing several tasks simultaneously, organizing in advance, understanding rather than just memorizing, and using the PQ4R method (preview, question, read, reflect, recite, and review). "Vignette Three: Test Taking and Assignment Preparation Strategies" details seven levels of knowing accompanied by seven categories of classroom tests and six types of test questions. This vignette also provides information on types and levels of test questions that may be used in multiple choice tests. A final section reviews the facts and discusses the importance of preparation, taking control, and using feedback and monitoring. The appendix presents a checklist for test and assignment preparation. (SM)

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Preface

A major problem in college education is getting students to make personal investments or reflective self-awareness in their own education. How does a teacher teach a student about intrinsic motivation? It seems to be a contradiction in terms. Yet it is possible. The materials enclosed are some of the means one teacher has used to help students tap into their own inner resources and to face the challenge of change.

The following vignettes are brief essays meant to help teachers engage students in self-regulated learning. The teacher may wish to use the materials for a brief seminar followed by a discussion; to distribute photocopies to interested students; to mediate the motivation of students at risk of failing, etc. The point is that the materials may help teachers to work with their students.

Please feel free to use or modify the materials but please be certain to clearly indicate the author and the ERIC source. Best of luck!

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Helping Teachers and Students Talk About Learning Strategies[1]
Vignette One: Strengthening your will-power - taking charge of your life.

Introduction:

Do any of the following statements sound familiar to you?

> "I must be pretty stupid to have to work so hard and then only to get lousy grades!"
>
> "I can just feel the pressure increase as the deadline for handing in assignments or writing tests approaches."
>
> "It seems other students do well but I always manage to take courses and teachers that are more difficult and demanding."
>
> "Preparation for class, assignments and tests only serves to remind me of just how hopeless the situation is. I'm much better off trying to relax."

Working smarter and not harder!

How we think about our abilities and the ways in which we manage our efforts are critical in understanding the differences between working "smarter" and "harder". Some students place the accent on themselves. They think: "I must not be smart to have to work so hard," "I must really be stupid to have to work this hard," "Intelligence is something fixed at birth," or "You've got it, or you don't" Other students focus on the task: "Where did I go wrong?," "I must have missed something in the directions, or the facts given in the work to be done. I'd better find out where and how I made this mistake. If I don't I'll likely make it again." "Intelligence is a product of ability and environment!" "Others have learned it before and so can I!" An emphasis on effort is not harmful providing it is in the appropriate direction. The thinking behaviours we engage in to know about effort and direction are called "strategies."

Consider the following example of learning a strategy. The behaviour directs us towards the goals with a minimum of effort. If ever you need to test out the alphabet on a computer or typewriter keyboard, and you wish to have each letter typed at least once, then this sentence will do: "The quick brown foxes jumped over the lazy dogs." By simply pressing on the "caps button" on the keyboard you can then test out the uppercase letters of the alphabet.

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[1]A special thanks to my friend and colleague Pierre Zubrzycki, Professor of Chemistry and Physics, who made critical suggestions for style, readability and usefulness of an earlier version of this monograph.

There is much evidence to suggest that just about all of use can learn and benefit from learning such strategies. There is even evidence that we can apply these strategies to other situations. When that occurs we can feel the power of reaching our potential.
For example, the same sentence used above can be used as a rough estimate of someone's typing efficiency. Most people have difficulty with some letters on the keyboard. By giving everybody the same test, which also includes the whole alphabet, we can get a good approximation of his or her aptitude for typing. So, whether you can actually use this strategy to test a keyboard for yourself, or use it to test someone else's ability to type, you have convinced others and yourself that "to think," increases efficiency.

Generally a student begins his work just as s/he has done in other courses or previous learning situations. If s/he has ability and has "gotten by" with cramming, if paraphrasing and plagiarism have worked, if teachers have accepted excuses for sloppy work etc. then the student is likely to repeat these strategies. It's only when the workload gets too demanding that the student realizes that s/he can't rely on her/his old strategies to cope with present academic demands. The student is faced with a choice. On the one side s/he may continue with old skills and strategies. On the other side s/he may acquire some new skills and strategies but at the expense that the time s/he would have had to complete the work will have to be invested in acquiring a new learning behaviour and strategy. A no win situation that leads to failure and despair.

Elaboration, Organization and Rehearsal: Basic strategies for working smarter

Just to get you started "thinking" about learning-strategies consider these skills: Elaboration, organization, and rehearsal. Elaboration requires you to edit notes, compare what you read with what you hear in class, summarize, and try to find real-world events and problems on which to apply what you have learned. This last element, finding your own example is very important. If you find that you cannot come up with at least one instance in which to apply the principle, then you should hear an imaginary alarm going off. Perhaps you didn't understand the principle. You may have passively repeated it to yourself but you never got actively involved. Finding an example is one of the best ways to test yourself to see if you are just going through mindless repetitions rather than rehearsing the materials. When you get very good at rehearsal you'll catch yourself being able to predict the questions teachers will have on their tests.

Organization, on the other hand, requires you to pay attention to the headings, subheadings, diagrams, tables, figures, charts and graphs, and sometimes to pictures and cartoons. In forcing yourself to understand, for example, how the diagram or chart "works" you find the means for understanding. As you travel from one city to another you expect to see certain other geographical landmarks on your way to your destination. These geographical markers,

perhaps names of other cities on the way, clue you to your progress. Reading headings and subheadings is the way authors and teachers tell you how to recognize where you are compared to where you have been and where you will be when finished. The diagrams, graphs, pictures etc. serve as a kind of "road map." Working with a road atlas or city map makes it much easier for us to develop a sort of "map in our mind" (i.e. "cognitive map").

The more senses you involve in your learning the easier and quicker it gets for you to collect, process and remember the information. Rehearsal then is planned and active reading of the assignments and replaces the dreaded "cramming". Listening to lectures implies getting involved rather than staring into space or cutting class. Re-writing your lecture notes so that they are complete sentences rather than the partial or "main ideas" that many of us make during the class is the combination of rehearsal and elaboration. Finally, talk with successful classmates about how they rehearse, elaborate and organize. Be careful not to compare with others your learning processes (how you work and study) rather than learning performances (the scores you get and whether someone did better or worse than you). Comparing performances leads to criticizing, bickering about grades, complaining about "the system", and, in general, being depressed. Learn to focus on what can be changed and how to go about doing it. You will find that as you learn to be more efficient at rehearsal, elaboration, and organization you get better with practice and that you don't have to do that painful "memorization" (trying to learn without understanding).

As you practice monitoring and developing strategies you will notice yourself improving. This will encourage you to learn more strategies. When this happens you will learn also that making good use of your time is a strategy that always pays off.

Working smarter and not harder: A real life example

I leave you with this "real-world" example which incorporates all of the elements and processes presented so far.

> Let's suppose we have a college student away from home for the first time, living /sharing an apartment. Let us also suppose this is the night the student is responsible for his part of "dinner night." Let's also assume the student were to prepare dinner by going out to get steaks. He returns home only to find he doesn't have any potatoes. Back to the corner variety store to get potatoes. Then he thinks, while in the store, of other items he might need to avoid making still another trip. He is also at a loss because he can't visualize or remember what exactly is left in the kitchen cupboards. How he wishes he had thought of this before he left the apartment to get the potatoes.

> Actually, he would have been better off to plan his menu, look around to see what he had, perhaps check out his budget to avoid another unpleasant surprise at the check out counter, and then make out a shopping list. Also, if the budget isn't too healthy and he still has a "steak" appetite he may want to plan ahead to see what the "weekly specials" are in nearby stores. Preparing a comprehensive and general strategy for doing his grocery shopping means he is working smarter not harder.

Now, as you can see, you have "learned" about being on your own to prepare your meal schedule. If you are on your own for the first time, you can hear yourself rehearsing the list, elaborating or adapting it to your own situation, and actually looking forward to practicing it. In this manner when you "learn" you will feel good about yourself, and your abilities and efforts rather than being reminded of all that wasted effort and of how "stupid" you feel. The choice is yours. Making choices is how you and your learning skills combine to produce "your education."

<u>What to change, when and how to change it, and especially how to get or give help for change.</u>

Finally, imagine that you are the person sharing your apartment with the student in the example above. Also suppose that you can see the behaviours he needs to change to work smarter and not harder. You would like to see him save some of his money, and avoid running around trying to get things done. How do you tell him? I mean, do you just walk up to him, and hope he sees the best of your intentions, and tell him? I think we all know that even if we see the problem, and know of a solution, letting someone know how they can change is a whole other problem. Most people will wait until our student friend asks for help or sends clear distress signals that he needs help. Meanwhile you sit there wanting to help but not knowing how to tell him that he needs help.

The student/teacher relationship is often times like this. The teacher can see the student working hard but not smart. The teacher, like you in the previous example, may know what to change, when and how to change it, but, just like you, the teacher may not know how to let you know without hurting your feelings. Can you imagine the difference it would make if our student friend who is preparing the meal in the example above, were to actually discover for himself that he needs help? To take the time to ask you if you could help? You would be happy on two counts. First, you know what to do and you are glad to help. You know he wants this advice. The two of you are going to work together. You can see the budding friendship already starting. What happened exactly?

The student who is preparing the meal must have thought to himself, "I can't do this!" or, "There must be a better way of doing this!" Also, the student realizes that he will need help since he doesn't have the knowledge about what to change, when to change etc. And, third, the student asks you for help. You would be turned off if he just wanted you to do it all for him. You want to help not substitute yourself in assuming his responsibilities.

Well, our teachers are just like you in this respect and in some cases you are just like that student who has to prepare the meals. Wouldn't it be better for students and teachers to work together? If you wait for the teacher to have to call you into the office to explain how you need help, then you are likely to react just like our student friend preparing the meal when you walk up to him to tell him how to work smarter. If, on the other hand, you are willing to take a long hard look at yourself, and you want to learn how to change for the better, than why not ask for help? Not help because you want to get the teacher's assignment over with (like doing the grocery shopping for the student, for example). Not because you want to impress the teacher in the hopes of being graded on effort (our student friend there is always asking for help but manages to make the same mistakes over and over again). No, the real change, the very first step, is for you to admit to yourself that you need to and that you can change for the better.

Your teachers will be happy to help you ---just ask!

Helping Teachers and Students Talk About Learning Strategies
Vignette Two: What's the use? You've got it or you don't!

Introduction

Students are often terrified by the hopeless feelings that accompany them as they prepare to take in-class, teacher-made tests or complete assignments. And yet there are students who seem to do well in spite of the subject, the teacher and the quality of the test itself. Of course, the simple, "commonsense," explanation is that such students are "gifted." It's as though it were an issue of "you are born smart or you aren't." Such may not be the case though. We would probably develop better learning strategies if we recognized that many of the so called "gifted" students simply have a learned skill rather than an inborn talent. Successful students develop learning strategies about test-taking and completing assignments. This essay is about how such strategies develop and how they "fit in" with the overall efforts of students "to learn."

Learning abilities: Giftedness versus strategies.

Students often work on the assumption that if their study habits worked in the past to "get them by" then they should continue using them again. And so, this seems reasonable. We tend to repeat those actions that have lead to success and to not engage in behaviours that have lead to failure. The critical question is to determine the breaking point between appropriate or inappropriate behaviours. The successful student is careful to monitor his or her work. In doing so s/he pays attention to the academic feedback which reveals to them whether they are progressing in the direction of "appropriate" or sliding in the direction of "inappropriate" academic behaviours. The feedback students should pay attention to comes in three types: Summative, formative, and normative. Let's look at each of these and see how they fit in with developing test-taking and learning strategies.

Students are very much aware of summative feedback in its most poignant form - the almighty grade! When an assignment is returned to the student with the teacher's corrections and/or comments, the first thing to look for is the grade! The outcome is that some students are either elated by the good grades or discouraged from the poor ones attributed by the teacher. The successful students try to decipher the teacher's comments. They want to avoid making the same or similar errors on future tests or assignments. Their attitude is that the teacher's comments are constructive criticism which is the second type or "formative feedback." Finally, "normative" feedback means that grades and teachers' comments allow students, school administration and teachers, parents, etc. to make comparisons between students or groups of students. It is quite natural for us to favour such comparisons when they flatter us; but none of us likes to submit to them when they point to our weaknesses and limitations.

Successful students actively seek out teachers' comments **regardless of the grade!** They are not in school on their way to pick up a degree. They are there for themselves. They want training in ways of thinking and how to translate it into concrete actions (cognitive strategies). What makes for a "successful" student is the realization that once one has learned something, it is "owned" by that person which sets him or her free to apply it elsewhere. In this manner the person becomes an educated person who is able to direct his or her own destiny.

Good students, even the "gifted", learn to develop strategies. It has been argued that the "gifted" demonstrate early in life outstanding abilities to develop cognitive strategies. That is, the gifted observe and note similarities and differences, draw inferences and make deductions, and generalize the results of their thinking into concrete actions in the form of formulating and developing problems and testing solutions. For us, the more common of the student mortals, this means that we don't have to wait until all hell starts to break out about us to think of changing or mending our ways of learning. If you cram (trying to do too much in too little time), or whatever "method" you use, and you don't pay attention to the signals (formative feedback) that are telling you that your "method" is coming apart, then you'll inevitably continue until it breaks into a crisis. This crisis usually comes to a head when your old "method" no longer is working to meet the demands of the upcoming test or assignment. Now, you have a real dilemma: You need a new strategy to solve the problem, and yet, if you take the time to learn and develop a new approach, you will not have enough time to complete the test preparation or assignment. At this time a feeling of hopelessness usually invades students. And, just like many of us on the "morning following the evening of heavy drinking", we are all ready to swear to change for the **next** time!

<u>Doing several "things" at the same time.</u>.

Some classic experiments in information processing theory have shown that it is impossible for us to monitor, process and respond to two or more incoming stimuli at the same time. What we do has been dubbed "time sharing." Now, it is possible to learn to shift quickly from one situation to the other so that **it appears** that we are monitoring two or more situations at the same time. The most readily available example of this is the Chess Master who is able to play a dozen games "simultaneously" while blindfolded! The point is that we think much faster than we can talk, write or read. So, the first skill necessary to learn to take tests and complete assignments is to make sure to have correctly received the instructions and directions. Successful students read the directions; read the chapter summaries in textbooks (when available); and, read the titles and subtitles. Learning how to read is a skill that we can all perform. Just how quickly we can do it and how much we can retain will be influenced by our own individual intellectual endowments. College libraries usually have quite a selection of books on study techniques. If your college has a large collection of the

"How to Study..." type of books you may wish to use this strategy: Ask teachers and students who have used them to help you narrow down the choices in the college's large collection.

Many students manage to take down acceptable lecture notes. The successful students have learned to systematically decipher and revise their notes as soon after class as possible. This behaviour motivates them to learn to take down information more accurately and legibly since it cuts down work in the revision process. Also it allows them to **reflect upon** the material. In this manner they impose order and discover meaning. In fact revising class lecture notes is one of the better strategies for rehearsal and elaboration.

Another aspect in which good students use time judiciously is in contacting their teachers. Teachers, contrary to popular myths, probably have had their share of problems and hassles much as you. Often they can advise you as to the best techniques available for acquiring their course materials. They can help you decide whether the material should be read or completed in one sitting or spaced out over several days. Take the time to read up on learning or study skills training. Ask your teachers for help about things you don't understand.

<u>"PQ4R" - An acronym for developing efficient learning strategies</u>.

One very popular method,"SQ3R" (Thomas and Robinson, 1972), has been revised into the "PQ4R" method and shown to be most promising. It requests students to **P**review, **Q**uestion, **R**ead, **R**eflect, **R**ecite and **R**eview what they are to read. A more active variant is to Preview, Read, Recite and Review and wRite. As you browse through the chapter to be read (Preview) make mental notes to yourself about what the pictures, titles, graphs, cartoons are about (Question). Perhaps if it is technical (such as several math, chemistry formulae) you may want to ask yourself what makes them different since there doesn't appear to be an immediately obvious one. Read a section of the chapter. If the margins contain annotations (running comments or definitions) or the text has boldface or italics, etc. then you can easily recognize this as major material. Often it is only these items which need to be memorized. Understanding comes when you can see the pattern or relationship (Reflect) amongst these "things" to be learned. After completing the section, close the book and try to state in your own words -and in writing- what you have learned. You'll be amazed to see how forcing yourself to put your ideas in writing helps you develop the critical reflect skill. Also, you'll have an objective means for comparing your work with the textbook rather than having to rely on your memory.

The PQ4R method applied to tests means that you should read over the whole test first. Make sure you read the directions, make mental notes about the number of sections, the length and complexity of test questions, the relative amount of time you'll need and <u>how much time you'll need</u> to answer them. Go through the test and answer all the easier

questions first. This will build your confidence. Then, ask yourself which questions seem most worth your time. A very short question should be preferred to a longer question worth the same total of points.

Advance organization: Putting the odds in your favour.

Another appropriate way to facilitate the critical process of Reflection is to read any assigned materials (handouts, homework, text etc.) in advance of course lectures. In this way the material acts as an advance organizer which helps you to selectively focus on what the teacher says. After reading the material, writing it out to summarize your understanding, and hearing it in class you will have involved three of the critical senses in learning. Educational specialists have shown that the more senses we involve and the more feedback we incorporate the more we facilitate the learning process. Finally, if you read something and don't understand make a note of it. Listen in class for more information. If questions are permitted, then ask. Otherwise see other good students or try to see the teacher.

If you find that you have problems with the part about writing out a summary of what you have read, or in taking class notes, then please see materials in the library on note-making or taking down lecture notes. Note-making is a learned behaviour. Give yourself the time to learn it. The reading and note-taking procedures are very similar and there is excellent carry over value between developing reading comprehension and note-making and vice-versa.

On the distinction between memorization and understanding.

Performing well on tests requires that you have actively (rather than passively) assumed the responsibility for receiving, organizing and operating (reflecting) on the information. While it may have been possible for you to bluff (on essays) or guess (on objective tests) your way through tests you will find that it is becoming increasingly rarer for you to "get by" without hard evidence that you have understood the materials. How do we demonstrate that we "understand"? Memorization without understanding is to simply parrot or mouth out the words such as repeating a sentence in a foreign language without knowing what each word means or does in the sentence. But this is not about foreign languages which have their own special techniques for learning. You need to show intellectual skills. This means the ability to operate on the information.

For example, as you get used to the PQ4R method you may want to start elaborating your own special strategies for each of the steps in the PQ4R method. Under "preview" you may want to time yourself for reading a typical page. Open the book to any page. Have a watch with a second hand ready and time yourself to see how much time you take to read the page.

If there are pictures on the page then measure the size of the page and subtract the size of the picture from the number for the page size. Count how many words there are on the page. How many words were read divided by how much time (in seconds) it took you to read the page will provide your personalized estimate of time needed to do work in this particular subject. If it takes you five minutes to read a page and you have sixty pages assigned for the next assignment, then you know you will need to find five hours (60 pages times 5 minutes equals 300 minutes, which when divided by 60 minutes equals 5 hours).

As you read the typical page, described in the paragraph above, you may want to underline words or phrases that you don't know or understand. If some of these words were in the previous assignment you can ask yourself if you really took the time to actively read the last assignment. Many textbooks have a mini-dictionary ("glossary") built in, or they have a list of key definitions at the end of the chapter. Either way, you can profit by looking up words in either list. If there is a summary at the end of the chapter you may wish to start by reading that summary. The point is, there are many strategies for learning and studying more efficiently. Shop around in your college bookshelf, talk to successful students, ask teachers and counsellors for help. Becoming actively involved will impress you with how much you learn without the dreaded exercise of "memorization." Go ahead and think! Most colleges have excellent insurance policies that will cover any accidental brain damage caused from thinking!

Helping Teachers and Students Talk About Learning Strategies
Vignette Three:Test taking/assignment preparation strategies.

The cognitive framework and background for developing tests.

Concretely, we wish to elaborate upon the seven categories from which teachers may develop tests or assignments and show how the test or assignment questions may be varied according to one of the six distinct possibilities. That is, there are only 42 ways of asking a student to demonstrate that he or she "knows" or "understands." We discuss the seven levels of "knowing" in this section, followed in the next section by the 6 types of test questions. A full discussion of "How to prepare for and deal with classroom tests and teacher assignments" is given in the second half of this essay.

Discovering the elements that make up the testing and assignment process should encourage you in knowing that there are only a finite set of such possibilities, and that you can learn to recognize what the question is asking for.

The domain of classroom tests is given in seven categories:

1. Understanding of terminology (or vocabulary)
2. Understanding of fact and principle (or generalization)
3. Ability to explain or illustrate (understanding relationships)
4. Ability to calculate (numerical problems)
5. Ability to predict (what is likely to happen under specified conditions)
6. Ability to recommend appropriate action (in some specific practical situation)
7. Ability to make an evaluation judgment (These seven descriptions are taken from Ebel, 1979; p. 83.)

Before we begin it is essential that we recognize the importance of this list. It isn't just something that has been arbitrarily produced by one expert. This list very closely parallels the landmark work by Bloom et al. (1953) The Handbook of Educational Objectives - the Cognitive Domain. This work was the result of a conference in which noted teachers from many disciplines were asked to clearly write out the criteria they used to determine if a student "knew" his or her material. If you compare the list by Bloom et al. on the next page, with the one given by Ebel above you will note the high degree of similarity.

Knowledge

1.0 Knowledge
- 1.10 Knowledge of specifics
  - 1.11 Knowledge of terminology
  - 1.12 Knowledge of specific facts
- 1.20 Knowledge of ways and means of dealing with specifics
  - 1.21 Knowledge of conventions
  - 1.22 Knowledge of trends and sequences
  - 1.23 Knowledge of classifications and categories
  - 1.24 Knowledge of criteria
  - 1.25 Knowledge of methodology
- 1.30 Knowledge of the universals and abstractions in a field
  - 1.31 Knowledge of principles and generalizations
  - 1.32 Knowledge of theories and structures

Intellectual Abilities and Skills

2.0 Comprehension
- 2.10 Translation
- 2.20 Interpretation
- 2.30 Extrapolation

3.0 Application

4.0 Analysis
- 4.10 Analysis of elements
- 4.20 Analysis of relationships
- 4.30 Analysis of organizational principles

5.0 Synthesis
- 5.10 Production of a unique communication
- 5.20 Production of a plan, or proposed set of operations
- 5.30 Derivation of a set of abstract relations

6.0 Evaluation
- 6.10 Judgments in terms of internal evidence
- 6.20 Judgments in terms of external criteria

A practical example at this point may help. A student not too long ago wished to write on child abuse. When the student consulted me on how to get going "in the right direction" we worked out this outline for the first part of his essay.

1. Child Abuse
    - 1.1 What do we mean by a "child"?
        - 1.11 Are we not all our parent's "child"?
        - 1.12 The legal criteria and why it should be used instead of several other criteria (listed & explained)
    - 1.2 What do we mean by "abuse"?
        - 1.21 Physical, sexual, verbal and "mental" abuse
        - 1.22 Which one of the several meanings in 1.21 will be used in this essay, and why?

In forcing himself/herself to address these issues the student has adequately met the **first 3 categories of the taxonomy.** That is, the student has shown a "1.10 Knowledge of specifics"; a "1.20 Knowledge of ways and means of dealing with specifics"; "1.30 Knowledge of universal and abstractions"; "2.0 Translation" (citing references and statistics and showing them to be adequate for the purpose under study); and "2.20 Interpretation" (gives examples to show what is and what is not child abuse -for example, the student examines the issue of parental discipline and its relationship to child abuse).

Now that the background work has been done the student may move on to the specific case(s) of interest ("3.0 Application"). The student begins by showing how the case(s) meet the criteria. Then the student analyses ("4.00 Analysis") the case. In the final steps ("5.00 Synthesis," and "6.00 Evaluation") the student suggests and defends how, for example, "normal" parental discipline may become child abuse without the parents ever being conscious that they are "abusing the child." Of course, many other pathways are open to the student. It's up to the student to decide which avenue he or she wishes to explore and defend.

As you can see the art of writing an essay is the inverse of reading comprehension. When you read a text you ask yourself questions such as the ones you address when writing an essay. What does the author mean by such and such a term? How does such criteria help us differentiate between normal and abnormal behaviour? So, you see, authors of textbooks are bound to the same strict rules. They have to show they know what they are talking about by defining terms, differentiating them from other terms which may appear similar, etc. Learning reading comprehension is a skill in the direction of learning to write.

The types and levels of difficulty of multiple choice questions

Our present task is to show how knowledge about the cognitive domain, and the application of the principles invoked specifically, leads to better understanding and performing on tests and assignments. But, before proceeding, we need one more essential piece of information to attain our specific goals: the types and levels of test questions which may be used in writing multiple choice tests. **A word of caution - this presentation focuses on the multiple-choice type of test.** However, it does not mean that most of this material could not be developed in any of the other tests [supply or "recall" (essays, fill-in-the-blanks, brief definitions), true or false, and matching].

The different levels of test questions are (Vernon, 1976):

Factual (or text explicit) Type Questions:

1. The Exact Matching Question.
2. The Partial Exact Matching Question.

Application Type Questions:

3. The Element Reversal Question.
4. The Example Substitution Question.

The Interpretive (or text/script implicit) Type Questions:

5. The Concept Reversal Question.
6. The "Analogy" Type Question.

Examples of Test and Assignment Questions:

FACTUAL TYPE QUESTIONS:

1. **The Exact Matching Question:** This type of question is usually used to test for:

Examples of: "1.10 Knowledge of Specifics,"

Essay type:

In what year was the first psychology laboratory founded?

Multiple Choice type:

The first psychology laboratory was found in which year?

a. 1856
b. 1879
c. 1904
d. 1920

Matching type:

___ 1. 1879 A. First psychology laboratory

True-False type:

True/False: The first psychology laboratory was founded in 1879.

Sentence Completion (or Brief Definition) types:

The year 1879 is particulary important in psychology because it _____.

Examples of: "1.20 Knowledge of Ways and Means of Dealing with Specifics,"

Essay type:

Freud first came to studying the human psyche through his interest in hypnotism. He studied and used it for several years then decided to stop. Explain why Freud decided to stop using hypnotism.

Multiple Choice type:

Freud came to think that hypnotism was incompatible with psychoanalysis primarily because it

a. was too slow in bringing out information
b. flooded the patient's consciousness when he was asked to remember everything while hypnotized
c. provided quick insights into the patient's problems but it suggested no cures
d. was not always possible to hypnotize all patients

Matching type:

___ 1.	"Flooding" the patient with insights	A.	Hypnotism is dropped from psychoanalysis

True-False type:

_____True/False: Hypnotism as a tool for investigating human unconscious was dropped from psychoanalysis because Freud felt it brought too much sudden (and usually painful) awareness to the patient when he was asked to remember everything he experienced while in the hypnotic trance.

Sentence Completion (or Brief Definition) types:

Freud's major reason for stopping the use of hypnotism was ...

Examples of: "1.30 Knowledge of Universals and Abstractions"

Essay type:

Identify and describe three major ways in which the Psychodynamic and Behavioral perspectives differ.

Multiple Choice type:

The most striking difference between the Psychodynamic and Behavioral perspectives resides in their disagreement on the

a. role that sex plays in the development of human behaviour.
b. importance to objectively measure human behaviour.
c. importance played by learning in explaining human behaviour.
d. role of the therapist to help the patient.

Matching type:

___ 1. Psychodynamics A. Unresolved inner conflicts

True-False type:

____True/False: The most important difference between the Psychodynamic and the Behavioral Perspectives is the difference in importance played by learning to explain human behaviour.

Sentence Completion (or Brief Definition) types:

The Psychodynamic perspective is distinguished from all other perspectives by its insistence that all human behaviour may be explained on the basis of ...

2. **The Partial Exact Matching Question:** This type of question may ask you to pick out which one of the following four choices is true or false, or which one is or is not a reason given for the variable under study. This type of question asks you to show that you can "2.0 Translate," and "3.0 Interpret" what you are being asked to learn.

Essay type:

What is the major criticism made about the Psychodynamic perspective? How would you explain the relative permanence of the popularity of the Psychodynamic perspective in spite of any short-coming?

Multiple Choice type:

Which of the following principles used in psychoanalysis was <u>not</u> formulated by Sigmund Freud?

a. Reality principle
b. Pleasure principle
c. Oedipus Complex
d. Electra Complex

Matching type:

___ 1. Electra Complex A. Anna Freud

True-False type:

____True/False: The Electra Complex was first described by Sigmund Freud.

Sentence Completion (or Brief Definition) types:

What shocked the public most about Freud's Oedipal Complex was his insistence that the male child's attachment for the mother was ...

<u>APPLICATION TYPE QUESTIONS</u>:

3. **The Element Reversal Question:** This asks for you to identify the question given the answer; to find the application given the principle and vice versa; and

4. **The Example Substitution Question:** This asks for you to identify a case or example, similar to the ones you have learned, and to select the principle, or terms, etc. which are appropriate. Again this type of question asks you to show that you can "2.0 Translate," and "3.0 Interpret" what you are being asked to learn to a real life situation ("4.0 Application").

Essay type:

A major criticism of the Psychodynamic perspective is that it is not easily verifiable using the scientific method. Provide one example of a common psychodynamic belief and show how it would be difficult to use the scientific method to test it.

Multiple Choice type:

The perspective that is least likely to rest on the principles of the scientific method is ...

a. Behavioral perspective
b. Neuroscience perspective
c. Sociocultural perspective
d. Psychodynamic perspective

Matching type:

___ 1.	Interested in the root causes of human behaviour.	A.	Psychodynamic Perspective

True-False type:

_____True/False: A patient interested in understanding how his or her early life experiences contributed to their current behaviour would do well to see a therapist oriented in the Behavioral perspective.

Sentence Completion (or Brief Definition) types:

Jack wants to stop smoking. He doesn't care to understand what caused it. He just wants to definitely stop smoking. He should see a therapist oriented towards the _____ perspective.

INTERPRETIVE TYPE QUESTIONS:

5. **The Concept Reversal Question:** The question usually substitutes a few key words that change or inverse the meaning of the statement as it was learned. The most popular is the use of "NOT" in such questions.

6. **The "Analogy" Type Question:** Two given terms or phrases are related in some way. You are asked to determine the nature of this relationship. These questions require the student to "Analyze" and "6.0 Synthesize."

Essay type:

We often hear about how the Psychodynamic and Behavioral perspectives are different. Explain at least two things these perspectives have in common!

Multiple Choice type:

According to the text, what is the result of research done to verify the validity of psychodynamic theory?

a. Freud's theories cannot really be tested
b. Freud's theories are being confirmed
c. Freud's theories have been denied
d. some of Freud's theories have been confirmed; others denied

Matching type:

___ 1. Validity is major issue A.Psychodynamic perspective

True-False type:

____ True/False: Probably the most severe criticism, in the final analysis, that can be made about the psychodynamic perspective is that it lacks validity.

Sentence Completion (or Brief Definition) types:

Probably the most severe criticism, in the final analysis, that can be made about the psychodynamic perspective is ...

Helping teachers and students talk about learning strategies for teacher-made tests and assignments.

Preparation: The purpose of tests and assignments is for the teacher to understand the process that students go through in coming to know why they know. Critical thinking is the key. When you watch a TV ad, and ask yourself "What is the real purpose of this ad?" you are engaging in critical thinking. When you ask yourself which statements are facts and which are opinion in that same ad you are engaging in critical thinking. When you learn to expect what teachers will do to evaluate you by paying attention to *key words* they use in lectures and assignments you are engaging in critical thinking. Students who do relatively "well" have mastered the art of adapting their study habits to the pattern of evaluation used by the teacher.

You know you will be tested, so why not prepare yourself from the beginning. For test-taking this means reading the materials *before* they are covered in class. You can almost expect that materials that overlap between your reading and class lectures will appear on the test. Second, *read* the assigned work, *listen* to the material again in lectures, and take the trouble to *write down and revise* what you have heard, then re-read the materials *this time underlining "important" information*. This approach helps you to know what the "important" material is because you have seen it, heard it, written it down and especially because you have thought about it while doing so. The payoff is that you now can also make a good guess about what to expect on the test! And, all of this with a minimum of memorization because you "involved" yourself.

Use your brain! Did you know that reading assigned work, listening to class lectures on these topics, writing down the information, revising your lecture notes and *then going through* the reading assignment, this time underlining "important" information, actually works better and "easier" than memorization! That's because you have actively planned, organized and imposed meaning on the material to be learned.

"Warm up" your brain. Think about the intentions and purposes for the reading, attending class etc. Think about questions as you browse through the assigned reading. Of course, take a break once in a while. The ideal is to take a brief break before the symptoms of mental fatigue set in.

Learn to link categories and thus to build knew ones. Students who can organize new information in terms of existing categories find it is easier to recall new information. Study skill books often describe the many methods. For example, you can use the

"rhyme" or the "similarity" approach to remember that "'i' before 'e' except after 'c', or "piece of pie".

This short list of categories represents what most college teachers expect from students in most courses: Concepts and their definitions, an object or event and its parts, an object or event and its characteristics, causes and effects.

Taking control: Try doing an activity of some sort and all the while repeating to yourself "I can't do this! I can't do this!" Imagine a person asking someone else out on a date with: "You wouldn't want to go out with me, would you?" How can anyone help you when you are your own worst enemy? In the context of tests we find that students hold such negative views as "Tests are to be feared!", "Teachers will give you the grade they want anyway!", or "Tests are usually a matter of luck that the teacher will ask questions on material I happen to understand."

Create a positive mental attitude. Learn to fight your dislike for studying. A negative attitude towards tests and assignments often relates to being tired or forced into doing something you don't want to do. Waiting until the end of the day to study doesn't help because many of us are tired out by then. Many people find that in the morning or during the day they can retain much more instead of waiting to the end of the day. The more active the effort the earlier it should occur in the day. Keep the routine homework that doesn't require as much for the end of the day.

For example, preparing the contents of the paper during some free time during the day and then working on the format and presentation problems at the end of the day. Psychologists have discovered that setting your goals and purposes helps you to see the meaning to things. So, if you don't have any clear goals or interests concerning why you are going to college, your courses will seem meaningless and irrelevant to you. The consequence is that you won't work hard. You will be pleasantly surprised to see the effect of short-term, intermediate and long-term goals on your motivation.

We suggest that you review before the test what you read and wrote in your notes. Make use of any free time to go see the teacher, to ask for additional explanations about something you read, or listened in class and that you still don't understand. Review handouts, assignments, previous tests and plan to attend any workshops, test reviews etc. Ask the teacher *specific questions* about the test. These include questions such as: "When is the next text (if it isn't already listed in the course outline)?","How much time will we have to write the test?", "What type of questions can we expect?", "Are there certain types of questions that will be weighed more than other types?", "Will one type of questions test us on materials from the textbook, another on lectures, handouts etc.?" "Should we concentrate more on some chapters or certain lectures than others?" The teacher's answers to these questions *when*

combined with your advance preparation will help you reduce stress and your test anxieties because they help you take control and to earn better grades. See the "Working Smarter Not Harder" section in this handbook for more information.

Monitoring and Using Feedback: It seems to students that teachers are very creative in inventing new ways to test students. Such students haven't seen the recurring patterns in tests probably because they have been too busy in being "down" on themselves, or angry with teachers, after looking at the grade 'they got.' Too many students don't pay attention to directions and corrections returned with their work ("formative feedback") about "what to do," "when to do it," and "how to do it."

For example, students are told two weeks in advance to read the assigned lab, to ask questions during any of the classes over the next two weeks, then to complete the lab according to the directions given. Many students who find tests "hard" misinterpret the purpose of explicit directions, plenty of lead time to do the work, study guides and outlines to mean that these "tricks" will allow them to save time and thus allow them to do the work at the last minute.

Teachers admit that there are differences in the "what, when" and "how" to do things. However these directions and requirements are often imposed by the scientific principles that govern each discipline. These directions become fair assignments when students are given directions, explanations and opportunities to ask questions about assigned work. So, why don't students, for example, get 5 to 10% more on their grades by complying with *simple directions typical in most courses*? For example, enter the title of the report, your name, date, title of the course and staple, in the upper left-and corner, all sheets. Of course many students complain this is trivia and not "important". This usually means they are in a rush to get to the *important "stuff"*. Learning to plan and execute your work according to the directions is one of the most important skills you can learn in taking tests. Since essays are the major problem, we present, in the following section key words associated with each of the categories for evaluation learning. You may wish to use this list as a starting point to match what you think is expected of you and what the teacher expects of you.

Tests and Testing: Have you noticed that some students start out with low performances only to progress to higher levels as they write tests and assignments? Such students know something important. They know that teachers can ask for two types of tests: Recognition (matching, true-false or multiple-choice) and, recall (essays, fill-in-the-blanks and brief definitions). Each of these types can vary along one or several of these dimensions which measures *how well you understand* what you have been assigned to learn.

1)"KNOWLEDGE":

The simple recall of material which shows that you can use the right word or expression in the right context. It is the use of appropriate facts and the proper combination of facts. The usual choice for teachers who must test you when there is much terminology and theory is to use recognition type questions or brief definitions. If you must write an essay then be certain to begin by defining the terms or using the terms as given in the course.

For example, "child abuse" must first address several important issues in order for you to demonstrate that you "know" what you are writing about. What do you mean by "child"? (a forty year old person is still his or her mother's "child".) When a parent slaps a child on the bottom for running into the street, is that "abuse"? Where does "parental and lawful discipline end and "abuse" begin? So, you see, what "you know" would be determined by the "facts" as presented from a sociological, political, or psychological context.

KEY WORDS & PHRASES: Attach the correct label to each item, cite, define, enumerate, give the name for, identify, indicate, label, list, match, mention, name, recall, record, select, state, underline, "what," "where," "when," and "who."

Demonstrated Learning: In this, the lowest level of learning outcomes, the student must recall or recognize previously learned materials ranging from simple facts to complete theories. Present the essential and bare facts. Accuracy and reliability of information are at a premium.

2)"COMPREHENSION":

Restating or reorganizing material to show that you understand the criteria that were used in setting up the information or developing the theory. Comprehension, in its simplest form, means that you grasp the meaning and the intent of the fact as well as the relationship of these facts to the principles and theories in which they occur.

For example, if you wrote your essay on "child abuse" for a political science course, and it is quite possible to do, you would need to *comprehend* that the political relations between countries may be reflected in the child-rearing practices and laws in those countries. Teachers often resort to brief essays, class discussions, individual or group class presentations, term papers to evaluate such work.

KEY WORDS & PHRASES: Appreciate, clarify, classify, comprehend, condense, convert, defend, describe, diagram, discuss, estimate, explain in general, extend, generalize, show you grasp, illustrate, make an inference, outline, paraphrase, realize, report on, restate, retell, rewrite, explain how you know or "understand," explain how you "see", show, sketch, state,

summarize, tell, trace, "why" did this event, method or process take place (a global overview)?

Demonstrated Learning: The student shows an understanding of the material by telling us about a specific topic with a certain amount of detail.

3)"APPLICATION":

Refers to problem-solving or applying the information you have learned to new situations. The process of manipulating information to show that you can select and use the general rules, procedures and methods for specific situations.

For example, given a definition could you recognize or provide an example, or vice-versa? Could you make up a classification list to sort data into the correct categories?

KEY WORDS & PHRASES: Apply, construct a model, demonstrate by using an application, employ, explain, extend to, extrapolate, generalize, investigate, give an example of, illustrate, modify, predict, prepare a ..., provide instances of, prove with the following example or case, refer to, show, solve, "use", "what would happen if...", "what elements/ statements best illustrate..."

Demonstrated Learning: The student is required to use given materials in a new and concrete situation. That is, the emphasis is on the application of rules, concepts, principles, laws or theories.

4)"ANALYSIS":

Requires you to separate the ideas into its components. How does any one part contribute to the whole as well as relate to the rest of the components?

For example, in studying child abuse what are the contributions of parenting (under what conditions was the child conceived?). Also how might child abuse be an expression of the social-emotional stability of the parents' relationship? What is the influence on child abuse of the each parent's personal child-rearing history (Are parents who were battered as children more or less likely to become abusive parents with their own children)?

KEY WORDS & PHRASES: Analyze, break down into, calculate, compare and contrast, compute, critically examine, critique, debate, determine, diagram in detail, differentiate,

discuss, distinguish, examine, experiment, inspect, inventorize, organize, prove, question, relate, scrutinize, solve, survey

Demonstrated Learning: The student can explain what makes the event, situation "tick". The explanations of events themselves, the order in which they occur, and the influence of being in or out of sequence, determines the quality of your analysis.

5)"SYNTHESIS":

Combining ideas into a statement or original essay. Essentially, are you able to take an organized structure and to show that it is possible to re-organize it according to new organizational principles? This is the place in which to give your opinion, evaluation or judgment on the topic and to support it with reference to the facts. It is very important that if your opinion or evaluation can be challenged that you present both sides (this is what is meant by the evaluation of the "strengths and weaknesses" in your arguments).

Again, and to continue our example of child abuse, the term "child abuse" usually is taken to mean physical pain or injury to children. There are several countries in which the concept is much broader and includes psychological harm. Thus, yelling at kids or using words that "hurt" their dignity are treated as "abuse". Developing the consequences (political, legal, societal) of such thinking here in Québec would be a synthesis. Using individual examples would fall under the "applications" cited above.

Teachers usually ask you to pool together what you have learned about differences and similarities of several groups studied A common example from a fill-in-the-blank psychology test would be:

Watson and Freud are both alike in that _____.

KEY WORDS & PHRASES: Arrange, assemble, collect, combine, compose, construct, create, demonstrate by providing an argument, devise, design, explain in detail, formulate, identify trends, interpret, manage, narrate, organize, produce, propose, prove with an argument, rearrange, review, set up, show relationships amongst...; show the events, laws or principles that support; support your argument with specific references to the facts; trace, "why" did this event, method or process take place (present the particulars or details)?

Demonstrated Learning: People who find new uses for conventional things or devise a new plan of operation or produce a set of abstract relations are engaging in synthesis. For example, the surgeon who decides that pulling an arrow out of someone's skull will cause

less damage than trying to extract it through the hole it created in entering the skull is engaging in synthesis, the highest form of intellectual ability.

6)"EVALUATION":

Set up qualitative and quantitative judgments about results, procedures and methods. Then, report on these criteria as you used them to solve a problem, write your essay etc. This usually leads you to discussing the strengths and weaknesses in your work. Also, it means being able to differentiate amongst the kinds of information you used.

For example, is the information you use to support or deny a point of view based on someone's research work? -professional or personal opinions? In the child abuse example this would mean being able to deal with the point of view that children should never be given corporal punishment to the opposite where children are used as sexual slaves in some countries.

KEY WORDS & PHRASES: Appraise, assess, choose, compare, conclude, contrast, criticize, decide, estimate, evaluate, grade, judge, justify, propose alternative ways of interpreting the facts, rate, revise, select, value

Demonstrated Learning: The ultimate evaluation is of your work. When you can predict most of the time, within +/-5%, what your grade will be on the assignment, you have achieved the ultimate evaluation of interest to you -being able to evaluate yourself.

Test Types and "Weights"

Although we tend to think of take-home work as "assignments" rather than tests they are included with oral, in-class and open-book as tests because they are formal measures and evaluation of student learning. There are obviously strengths and weaknesses to any of these for both teachers and students. For example, teachers know that essays (and other recall type tests) discourage guessing while multiple-choice (when negative grading isn't used) encourage guessing. Teachers and students both know about the consequences of one type of test over another. That is why teachers vary types of tests and students study differently depending on the type of test they are expected to write.

What needs to be made explicit at this time is that teachers also have different *expectations for student work* as a function of the type of test. If you are given take-home and open-book tests teachers may realistically expect much more than definitions and long quotes. They expect you to operate on the information to demonstrate your skills. This means that the

longer you have to do the assignment and the more resources you are allowed to use then the more important ("weight") will be the grade for that assignment towards the final grade. Teachers are always dismayed to find that a student puts in no more time and effort to prepare and execute an essay worth 30% of the final grade as he or she puts in for an assignment that has been posted as counting 5% towards the final grade.

Taking the Test: Planning to take a test involved several steps. First, regularly prepare yourself over the time between each test or assignment. Don't let the work "pile up". Use the "night before" to review, not study. Very few people work well under the strain of realistic anxiety (knowing you aren't prepared for the test) and stressful situations (trying to do too much in too little time). While we are on the topic of "anxiety" one of the most frequent complaints of students is "exam" anxiety. Assuming students have prepared for the test, and that they know what type of test to expect, and when to expect it, some students often "freeze" on a question when they can't do it. The more they think about it the more they see time slipping by and their grade going down. The solution is to focus on what you can do. Move on to the next item. Do what you can. If nothing else works try to narrow down choices for objective type questions/answers or prepare a topical outline for the essay. You college counselling services should have someone skilled to help you over these rough spots.

Write your name in the space provided. Read the directions. Examine how much material, what type of questions, and how much each section is weighed or used to count towards the evaluation. For example matching questions are usually used to check on your comprehension of basic principles, and generally are weighed much less than other equally long parts of the tests. Yet, they take up more time! Unless the matching are worth more than other parts on the test you should do it last. And then do those that come immediately to mind from a first reading. The moral is to spend time where it counts. For every minute spent earning 2 points you could have been working on a part that earns you 4 or 5 points. It's like pay. You work for the one that pays you the most for your investment of time and effort.

For multiple-choice tests read all of the question stem and each of the answer stems. Ideally, for factual type multiple-choice questions you should cover the answer stems, read the question and make an effort to recall the most likely answer. Then look for a reasonable approximation. On essay tests you should use the margin, or any space provided for this purpose, to think and outline the answer. Many students get substantially lower grades because they answered only part of the question.

Finally, talk to your teacher when you get a chance. Perhaps the single best source of information about how to prepare to take tests and complete assignments for the course is from one who mastered the art of passing these in the discipline. Planning and preparation coupled with systematic review will help you to attain your level of ability more quickly so that you will be able to function more effectively in college.

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Appendix 1: A checklist for test and assignment preparation:

1.THE CONTENTS OF YOUR WORK:

1.1. Knowledge of specifics:

- 1.11 Show, by the use of appropriate vocabulary and spelling, that you have read the assigned materials and listened to class lectures
- 1.12 Refer to theories, principles, events etc. by name
- 1.13 Know the meanings for words as used in this course
- 1.14 Does your verbal description ("who, what, where, when, why" and "how") of an event match what someone who was there would say they saw?

1.2 Knowledge of ways and means of dealing with specifics:

- 1.21. Apply the rule correctly
- 1.22 Give the correct chronological sequence of events
- 1.23 Describe the steps in a process or method
- 1.24 Can you see trends?
- 1.25 Name the classification system or standard you used

1.3 Knowledge of universals and abstractions

- 1.31 State the generalized concept or idea to which this term, symbol, event etc. is related to
- 1.32 Accurately state the principle, law, theory

2. DEMONSTRATING YOUR ABILITIES BY OPERATING ON THE CONTENTS (items 1.1 through 1.3):

2.1 Translation:

- 2.11 State the information in your own words (this is called "paraphrasing", so don't forget to cite the source) rather than simply providing a long quote. Also, if you must use a quote, are you able to quote only what is essential to your argument?
- 2.12 Provide a concrete example of the theory, event, principle etc.
- 2.13 Recognize in charts, tables, graphs, diagrams etc. the theory, principle, law etc.
- 2.14 Can you see the differences between literal and figurative statements?

2.2 Interpretation:

- 2.21 Give reasons or explanations for pursuing or avoiding, including or omitting certain facts, events etc.
- 2.22 Can you see the similarities or differences in points of view, events, statements etc.?

2.23 Summarize or draw conclusions from observed data or other evidence
2.34 Distinguish between cause-effect and incidental relationships?
2.35 Work with analogies, similes and metaphors
2.36 Follow directions. Perform tasks as explained or decide if more information is needed to carry out the request.

2.3 Application:
2.31 Apply previous learning to this situation
2.32 Apply a previous law, principle or theory to a new situation
2.33 Apply an abstraction to a real problem
2.34 Identify and select what is needed to carry out the process that will solve the problem

2.4 Analysis:
2.41 Distinguish fact from opinion
2.42 Distinguish fact from hypothesis
2.43 Distinguish fact from conclusion
2.44 Points out unstated assumptions
2.45 Show what would happen to the relationship, principle, theory etc. if this event or situation were or were not present
2.46 Check out the hypothesis with the facts
2.47 Detect errors in your own thinking
2.48 Differentiate your purpose from your point of view, opinions and feelings
2.49 Differentiate biases, propaganda from facts

2.5 Synthesis:
2.51 Organize ideas, materials into a process
2.52 Propose, plan and develop an outline
2.53 Produce your own charts, tables, graphs, diagrams to support your work and arguments
2.54 Devise schemes for classifying information
2.55 Make deductions from your symbols and propositions
2.56 Suggest applications and extensions by applying your propositions

2.6 Evaluation:
2.61 Evaluate according to evidence
2.62 Evaluate according to standard criteria
2.63 Evaluate according to criteria you have drawn up

Evaluation Criteria: Your tests and assignments are evaluated according to the measurement device that was used to assess your learning. It is far easier to correct recognition type tests (multiple-choice, matching, true-false etc.) but it is much more difficult to build them. The recall type tests are easy to prepare but much more difficult to evaluate.

What we do know is that all tests and assignments are graded according to one of three types of evaluations: summative, normative and formative. Students are very much aware of summative evaluation in its most poignant form - the almighty grade! When an assignment is returned to the student with the teacher's corrections and/or comments, the first thing to look for it the grade. The successful students try to decipher the teacher's comments. They want to avoid making the same or similar mistakes again. That's formative feedback. Their attitude is that the teacher's comments are constructive criticisms. Finally, normative feedback means that grades, performances etc. allow students, school administration and teachers, as well as parents to make comparisons about performances relative to others. Students are acutely aware of this when they apply to university programs which are heavily solicited.

So, if you get feedback take the time to read it, follow-up on it or ask the teacher to be more explicit in his or her comments. For example, "strengthen your conclusions" should become "The facts upon which you draw your conclusion have not all been presented. I suggest you add some more information (the teacher should point out where) to support the conclusion."

Student evaluations also include an appreciation of their abilities to relate information in concrete, functional and abstract ways. Students who can only refer to the literal meanings, who can never see beyond what the senses relate to them are functioning at the concrete level of analysis. For example, their response to the question: "In what ways are lions and tigers alike?" would be "they both have fur, a tail, paws etc." The students who must operate at the functional levels of "analysis" must show that they can see patterns, trends, interpretations beyond what the mere senses are telling them. Their answer to the question would be: "they both can run, reproduce their species, live in prides etc." The highest level of functioning is "synthesis" in which pure abstractions are essential. The answers here to this question would be: "They are both carnivores of the feline family characterized by a male dominant hierarchy." You can imagine the contrast in grades that a student's answer at each level would receive. Now that I have your attention try these. Here are three words that do not ordinarily occur together. The object is to find a fourth word, or kink, that relates all three: "rat", "blue" and "cottage." (concrete level of performance); "College," "University" and "State Department of Education" (functional level); and, finally the abstract level of functioning (sorry, beyond this point, there are no free aspirins for the headaches!) "Leaf," "Fly," and "Tree".